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ENTOMOLOGICAL NEWS

OCTOBER 1946

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ENTOMOLOGICAL NEWS

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Two New Species of Skippers from North and Central America (Lepidoptera: Hesperiidae)

By H. A. FREEMAN, Pharr, Texas

Celaenorrhinus stallingsi new species (Fig. 1)

This species appears to be nearer *fritzgaertneri* (Bailey) than any of the other species in the genus; however there are several specific differences that can easily be noticed. In *stallingsi* the coloration is darker brown, and the small white spot found in interspace 1, toward the base, in *fritzgaertneri,* is absent and in its place is a black dot. On the under surface of the primaries the oblique discal band of six white hyaline spots reappears and below the sixth spot there is a white area that extends to the outer margin of the wing. This area is not present in *fritzgaertneri.* The fringe is concolorous with the wings and not feebly checkered as in *fritzgaertneri.* The genitalia differs from the Godman and Salvin figure (Biologia, Pl. 85, Fig. 4) in the shape of the uncas and the scaphium, the saccus is shorter and the vinculum is not recurved, there is a curved spur at the caudal end of the aedeagus and the terminal arm of the clasper is longer and more pointed than in *fritzgaertneri.*

Expanse.—♂, 42 mm.; ♀, 43 mm.

Described from 2 specimens, 1 ♂, V–28–41, Monterrey, N. L., MEXICO, collected by Don B. Stallings; and 1 ♀, XI–8–44, Pharr TEXAS, collected by the author.

This species is named in honor of Mr. Don B. Stallings, who is one of our outstanding lepidopterists.

Holotype.—♂, V–28–41, Monterrey, Mexico, is in the Stallings and Turner collection and *allotype* ♀, XI–8–44, Pharr, Texas, is in the collection of the author.

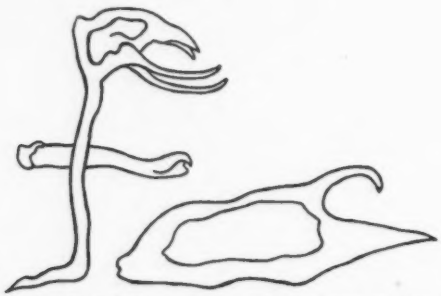

Figure 1. Genitalia of *Celaenorrhinus stallingsi* new species, ♂ holotype, Monterrey, N. L., Mexico, V–28–41.

Calpodes evansi new species (Fig. 2)

♂.—Upper surface.—Primaries, dark brown, becoming lighter toward the base due to the presence of light brown scales and hairs. There are two tan subapical spots and four larger semi-hyaline spots arranged as follows: a narrow one at the end of the cell, and three larger ones in the lower half of the wing between the cell and the outer margin. These are all tan in coloration.

Secondaries, dark brown ground color, well suffused toward the base with lighter brown scales and hairs. There is an indistinct light band running from the coastal margin toward the anal angle.

Under surface.—Primaries, light brown becoming much darker toward the base. All of the spots reappear and the bottom one is suffused with sordid white scales.

Secondaries, brown, with a bluish-violet sheen over all but the anal angle, which is dark brown. There is an indistinct white band running from the costal margin nearly to the anal angle.

Fringe of both wings light brown. Body, dark brown above, light beneath, nearly white.

Expanse.—45–47 mm.

♀.—Similar to the ♂, except the hyaline spots on the upper surface of the primaries are lighter in coloration, the white band on the lower surface of the secondaries is not easily discernible and the bluish-violet sheen on that surface of the wing is a little more pronounced.

Expanse.—49 mm.

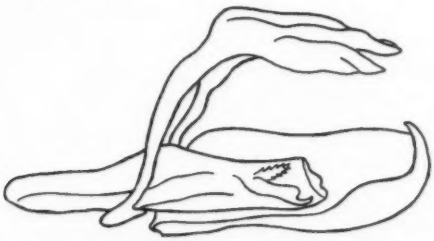

Figure 2. Genitalia of *Calpodes evansi* new species, ♂ paratype, Limon, Costa Rica, X–5–15.

Described from 4 specimens, 3 ♂♂ and 1 ♀. The data on these specimens are as follows: 1 ♂, Limon, Costa Rica, X–5–15, collector not known; 1 ♂, Belzie, British Honduras, VII–06, collector not known; 1 ♂, Pharr, Texas, X–21–44, and 1 ♀, Pharr, Texas, X–8–44, both collected by the author. The two Central American specimens were loaned to the writer by the American Museum of Natural History.

This species is named in honor of Brig. W. H. Evans of the British Museum, who first recognized this species as being undescribed.

Holotype.—♂, X–21–44, Pharr, Texas, and *allotype* ♀, X–8–44, Pharr, Texas, are in the collection of the author. The two Central American *paratypes* are in the collection of the American Museum of Natural History.

Calpodes evansi resembles *sylvicola* H.-S., in the maculation of the primaries, both above and beneath. The white band on the under surface of the secondaries is much broader and more conspicuous in *evansi* than in *sylvicola*. The main difference is easily discernible in the greater size of *evansi* being nearly twice as large as *sylvicola*.

Report of Mosquitoes Collected at Fitzsimons General Hospital, Denver, Colorado, During the Seasons of 1944–1945 *

By WILLIAM R. LASKY, Sgt., U. S. Army, Fitzsimons General Hospital, Denver, Colorado

There has never been a systematic survey of the mosquitoes of the State of Colorado. In 1918 Dr. T. D. A. Cockerell, of the University of Colorado, published a list (Journal Econ. Ent. XI: 195–200, 1918) on the order of a preliminary survey. In 1924, Dr. Harrison G. Dyar, of the U. S. National Museum, republished Dr. Cockerell's list as a supplement to his observations and studies made at Grand Lake, Colorado, at an elevation of 7,000 feet. He was mainly concerned with the Canadian fauna occurring at that high altitude and, in compiling his list, he compares his findings with those of Dr. Cockerell.

The writer acknowledges the assistance of others whose encouragement and help with difficult identifications have made this work possible. He is particularly indebted to Colonel Hugh W. Mahon, M. C., Chief of Laboratory Services, Fitzsimons General Hospital, whose constant encouragement and interest have been most helpful. He is further indebted to Colonel J. Vincent Falisi, M. C., Chief of Laboratory Services and to 1st Lt. Hugh L. Keegan, Sn. C., Entomologist, Seventh Service Command, Omaha, Nebraska, for their careful confirmations of identifications and for their assistance and advice. The author wishes to express his thanks to Dr. Maurice T. James of Colorado A. & M. College for his help in determining the validity of the first record of *Culex pipiens* Linn. in Colorado.

* In 1942 the Seventh Service Command Laboratory at Omaha, Nebraska, organized a Mosquito Collecting program for the Army installations in the Service Command. In 1944, Fitzsimons General Hospital was included in this program. The findings of the Service Command Laboratory were published by Theodore A. Olson and Hugh L. Keegan, jointly, in the Journal of Economic Entomology, 1944, Vol. 37, pp. 780–785 and p. 847. Since these findings deal with the nine state area of this command and are concerned mainly with the mosquitoes related to disease transmission, it is felt that the present report, which is more specific in nature, is warranted.

This report deals with the eighteen species of mosquitoes, four of them new to the State, collected on the post area and within the environs of Fitzsimons General Hospital, located in Adams County, thirteen miles east of Denver, Colorado, at an altitude of 5,280 feet.

Methods of Collection and Results Obtained

During the two-season survey, adult mosquitoes were collected nightly in a single New Jersey-type light trap. This trap was set up at various points on the post and these stations were rotated weekly. In 1944, 14,459 mosquitoes were collected in the five months, May through September, during which time the trap was set up 92 nights out of a possible 143 nights. Of the remaining nights, in which no trapping was done, 40 occurred on weekends, and 11 were inclement. In 1945, the survey was conducted from May through October and 5,285 mosquitoes were trapped. The trap was set up 100 nights out of a possible 184. The season being a very wet one, 36 nights were unfit for trapping because of rain or snow and 48 occurred on the weekend. A total of 19,744 mosquitoes was collected by means of a single trap during the two seasons. During both seasons, the greatest numbers were collected during the last two weeks of August and the first week of September. The species yielding the greatest number of individuals were: In 1944, *Culex tarsalis, Aedes vexans, Culiseta inornata, Aedes dorsalis* and *Culex pipiens,* in the order named. In 1945, *Culex pipiens* led, followed by *Aedes vexans, Culex tarsalis, Culiseta inornata* and *Aedes dorsalis.* (See Table 1.)

Adult mosquitoes were also collected by hand, while both resting and biting. These collections were made weekly. Resting collections were made under bridges, road culverts, in buildings and under duck nesting shelters at the game refuge. Biting collections were made both in the daytime and evenings. In the 1944 season 152 mosquitoes of six species were collected in this manner. In 1945, 1,475 mosquitoes of 15 species were taken.

Collections of larvae were made weekly and yielded a total of 2,020 specimens during the two seasons. *Aedes dorsalis*

led as the most numerous species of larva collected; then came *Aedes vexans, Culex tarsalis, Culiseta inornata* and *Culex pipiens.* (See Table 1.) Eighteen distinct breeding sites were found, of which 5 may be called permanent while the remainder depend on rainfall, irrigation and snow to become suitable for breeding. Larvae were taken in animal hoof prints filled with rain water, in alkaline, grassy rain water pools, in an irrigation pond marsh, in road ditches, in irrigation ditches throughout the post area and in the irrigation inlets and catch basins of this system. Larvae were taken in an ornamental fish pond, at the grassy sides of a natural creek, in waste disposal cans partially filled with rain water and even in an old rain-water-filled bedpan on the post dump.

The following table summarizes the results of the collections during the two seasons of the survey. A total of eighteen species was found, belonging to four genera. Of the 29,391 specimens taken, over half were of *Culex tarsalis.*

TABLE 1. Mosquito Collections at Fitzsimons General Hospital During 1944 and 1945 Seasons

Species	Trap	Hand	Larvae	Total
Aedes dorsalis	388	37	5,853	6,278
Aedes fitchii	2	1	—	3
Aedes increpitus	15	110	—	125
Aedes nigromaculis	51	49	9	109
Aedes sticticus	2	2	—	4
Aedes triseriatus	15	9	—	24
Aedes trivittatus	58	3	20	81
Aedes vexans	1,789	47	838	2,674
Culex apicalis	—	3	—	3
Culex pipiens	2,691	165	73	2,929
Culex restuans	10	—	—	10
Culex salinarius	2	—	2	4
Culex tarsalis	14,103	901	666	15,670
Culiseta incidens	9	36	55	100
Culiseta inornata	590	262	499	1,351
Culiseta melanura	7	—	2	9
Culiseta morsitans	—	1	—	1
Psorophora signipennis	12	1	3	16
	19,744	1,627	8,020	29,391

New records for the State of Colorado

Aedes sticticus Meigen. Four adult ♀♀. In trap: Aug. 10 and 15. Biting: Aug. 8 and 13, 1945.

Aedes triseriatus Say. Twenty-four adults, all in 1945. In trap: ♂♂, Aug. 16, 26, 30, Sept. 6; ♀♀, July 30, Aug. 16, 21, 23 (2 specimens), Sept. 6 (2 spmns.), Sept. 7 (4 spmns.). Biting: July 26 (3 spmns.), Sept. 4. Resting: ♂♂, July 9, 16, Aug. 13; ♀♀, July 23, 30.

Culex pipiens Linn. Two thousand and nine hundred and twenty-nine adults and larvae were collected. The following records include both sexes. In trap: Sept. 4 to Oct. 1, 1944, 92. Aug. 7 to Oct. 31, 1945, 2,599. Resting: Sept. 30, 1944, 42. Aug. 8 to Oct. 31, 1945, 123. *Larvae:* Sept. 15 to 29, 1944, 37. Aug. 2 to Sept. 25, 1945, 36 specimens.

Culex restuans Theobald. Ten adults were collected, all in 1944. ♂, Aug. 16. ♀♀, Aug. 16, 17, 19, 20, 24, 26 (2 spmns.), Sept. 3, 4.

NOTES

Aedes dorsalis Meigen

Aedes dorsalis is the second most abundant mosquito in our area. It breeds in tremendous numbers in grassy pastureland that has many cattle footprints and shallow depressions which periodically fill with snow and rain-water forming shallow, alkaline pools. The larvae develop very fast in these pools, which soon become black with their countless numbers. The end of April is the earliest breeding date recorded and by May 4th literally thousands of *Aedes dorsalis* were observed emerging. Breeding continues throughout the season as late as the first of September and larvae are to be found any time during this period provided the area has not dried up. This area does dry up three or four times during the season but frequent summer showers make it suitable for breeding again. Associated with *Aedes dorsalis* may be found small numbers of *Aedes nigromaculis, Aedes trivittatus, Aedes vexans* and *Culex tarsalis. Aedes dorsalis* were also found breeding in several other temporary rain-water-filled prairie pastureland depressions, in both shaded situations and in sunlight. They were found in fairly large numbers in a road-ditch filled with slowly running irrigation water together with *Culiseta inornata.* In very small numbers, it occurred in an artificial, stagnant fish pond

on the hospital grounds with *Culiseta inornata, Culiseta incidens* and *Culex tarsalis.* Finally, it was found breeding in animal hoof prints at the side of, but never in, a small, natural creek, Tollgate Creek. It was never found in permanent locales such as the irrigation marshes north of the hospital or in the post irrigation system's catch-basins.

Aedes dorsalis is a very important pest in this area. On the golf course it rests in fairly large numbers and when disturbed by golfers passing by it does not hesitate to attack legs and arms. Though these insects were particularly vicious after sundown, if disturbed, they bite throughout the day.

Aedes fitchii Felt and Young

Only three specimens of this mosquito were taken, all in 1945, so it may be assumed that this species is rare in our area. Two of the specimens were trap-collected, on July 4 and July 20, in the middle of the hospital area near an ornamental fish pond. The third was found July 6 resting under the ties of the bridge that spans Tollgate Creek.

Aedes increpitus Dyar

This species was not found in our area until the 1945 season when it was taken in moderate numbers resting under Tollgate Creek bridge. The first specimens were taken May 16 and the last were taken the end of July. Through these months a few specimens were taken biting on the post area. Fifteen individuals were found in the trap from May 15th to the first of July.

Aedes nigromaculis Ludlow

This mosquito was taken in largest numbers in the light-trap, 51 individuals being taken thus. It was also collected in moderate numbers by hand, while resting and biting, and many were observed emerging from pupae that were living with *Aedes dorsalis* and *Psorophora signipennis* in the rain-water-filled, grassy depressions and hoof-prints adjacent to Tollgate Creek on July 26, 1945. Larvae were collected in this same breeding area from June 7th to August 13th, 1945, in small

numbers and together with *Aedes dorsalis, Aedes trivittatus* and *Aedes vexans*. They were not found breeding elsewhere about the post and it is thought that they prefer the above alkaline, grassy marshes to other types of breeding areas. In the trap, *Aedes nigromaculis* was collected from June 18th to the middle of September. This mosquito was much more frequently taken in the trap in the 1945 season than in the 1944 season.

Aedes nigromaculis was found to bite very savagely late in the afternoon and during the day if disturbed from its resting place in the high grasses near its breeding locale. It is too uncommon to constitute an important pest.

Aedes sticticus Meigen

Specimens of *Aedes sticticus* were collected only by trap and while biting in the daytime. The four specimens taken are the first published records of this mosquito from Colorado.

Aedes triseriatus Say

Twenty-four specimens, both male and female, of this species were collected during 1945 at Fitzsimons. These are the first published records for this state. Although extensive investigation was made to ascertain the breeding locales, none was found. There are no really suitable tree-holes in the area surrounding the post as most of the trees, cottonwoods and willows, have such porous bark that the rain water does not remain in their crevasses longer than 48 hours, even after heavy rains. Presumably this mosquito is breeding elsewhere and further work is necessary to discover its breeding place. Adults occurred in small numbers throughout the post, especially in the vicinity of the duck pond refuge where it was found active and biting throughout the day. Both trap and hand collections were made throughout July, August and as late as September 7th, 1945. However, nowhere was it observed in any numbers.

Further work will be necessary to determine its local importance. It is a vicious daytime biter and of some annoyance to golfers.

(*To be continued*)

A New Centiped of the Genus Guambius from Mississippi

By Ralph V. Chamberlin

The new lithobiid centiped here described is represented by a male and female forming part of a small collection made at Pass Christian, Mississippi, in February, 1946, and submitted to me for study by Wm. F. Rapp, Jr. Other chilopod species represented are the following: *Theatops posticus* (Say), *Cryptops hyalinus* (Say), *Otocryptops sexspinosus* (Say), *Scolopendra viridis* Wood, *Neolithobius mordax* (Koch), *Geophilus mordax* Meinert. The types of the new species are retained in the author's collection at the University of Utah.

Guambius (Sibibius) christianus, new species

Dorsum uniform light brown, the head but little darker. Antennae dark brown, paler at tip. Legs with middle joints brown, the proximal ones paler and the tarsus yellow or somewhat rufous except at base.

Antennae short, composed of 26 articles. Ocelli in three series, 1+3,3,2; the single ocellus largest, the most caudal of the top series also large, the ocelli of the bottom series small.

Prosternal teeth 2+2, the outer tooth on each side slightly larger than the mesal one; median incision V-shaped, the angle acute. Ectal spine setiform. Coxal pores round 4(5),4,4,4.

Ventral spines of first legs 0,0,0,0,1; dorsal also 0,0,0,0,1. Ventral spines of penult legs 0,1,2,3,2; dorsal 0,0,3,2,2(1); claws 3. Ventral spines of anal legs, 0,1,3,3,1; dorsal, 0,0,2,1,0; claws 2. None of the coxae armed.

The claw of the female genital forceps large and strictly entire. Basal spines 2+2, these all conically acute from base to apex, the messal one on each side much smaller than the ectal one.

Length of female holotype, 12.5 mm.

Locality.—Mississsippi: Pass Christian. An adult female and a not fully mature male were taken on February 15, 1946 by J. and W. Rapp.

The male is 9.2 mm. long. In the spining of the legs it differs in having the ventral spines of the penult 0,1,2,2,2, and of the anal legs on one side 0,1,2,2,1. The penult legs not as yet modified. The fourth article of the anal legs with a longitudinal dorsal sulcus mesad of which is a longitudinal ridge bearing a series of setae. The ocelli are 1+3,2,1.

The species is apparently nearest to *G. oedipes* (Bollman) of Arkansas, but it is a smaller form with claws of anal legs 2 instead of 3, etc. There is no indication in the not fully developed male of *christianus* of such exceptionally strong modification of the anal and penult legs as characterize *oedipes*.

Notes on a Few Dipterous and Hymenopterous Parasites of Mud-wasps (Dipt., Hymenoptera)

By Phil Rau, Kirkwood, Missouri

Hymenoptera

Mesostenus discoidalis Cr. [H. K. Townes].* A bamboo stem (*Arundiaria tecta*) from Reelfoot Lake, Tennesee, contained two cocoons of an unknown Trypoxylon wasp. From these emerged two ichneumonid parasites, *M. discoidalis* Cr. The insects left the cocoons nearly a month apart, one on May 6, and the other on June 4, 1941. Some years earlier, a parasite of this species (determined by R. A. Cushman) emerged from a nest of *Sceliphron caementarium* on May 15. Some of the cells in this nest were reused by the wasp *Pseudagenia millipes*, so I do not know which of the two wasps was host to the parasite. There are three species of the genus *Mesostenus* listed in "Insects of New York" (1928), but hosts are not given for any of them.

* The names of the specialists who named the insects appear in brackets.

Chrysis parvula Fab. [H. K. Townes]. Several dead specimens of this parasite were found in the sealed cells of *Sceliphron caementarium* in a nest taken at Steeleville, Missouri, in 1942. In one of the cocoons in the same nest, made by *Chalybion cyaneum*, another *C. parvula* was found. The latter observation shows, of course, that the host lived long enough to make its cocoon after parasitization.

Sphaerophthalma pennsylvanica scavea Blake [H. K. Townes]. A dead male of this parasite was found within the cocoon of *S. caementarium* in a mud nest taken in St. Louis county, Missouri, and two additional males emerged from similar nests brought from Huzzah, Mo. and Ellsworth, Kansas. The former emerged on June 10, 1942, and the latter on Aug. 30, 1942. Here too, the hosts did not die until after they had produced the cocoons.

DIPTERA

Anthrax daphne O. S. [R. H. Painter]. Several of these parasites emerged from the cells of *Sceliphron caementarium* Aug. 4 to 6, 1942. The mud nest was taken near Scott City, Kansas.

Anthrax albofasciatum Macq. [R. H. Painter]. Two cocoons of *Trypoxylon clavatum* taken from an old nest of *S. caementarium* were parasitized by this fly. The nest was taken near Eminence, Missouri, and the adults emerged July 23, 1942.

Anthrax pauper O. S. [R. H. Painter]. A nest of *S. caementarium* sent by a friend from somewhere in Oklahoma gave forth parasites of this species on June 12, 1942, and nests collected from Scott City, Kansas, gave several adults in August, 1942.

Anthrax slossonae Johns. [R. H. Painter]. Six adults of this parasite emerged from the cocoons of *Trypoxylon politum*, the pipeorgan builder. The nests were taken at Reelfoot Lake, Tennessee, and the flies emerged June 7 to 16, 1941.

Toxophora amphitea Walk. [H. R. Painter]. Several cells in an old *Polistes* nest had been reused and sealed with mud by the wasp *Odynerus foraminatus* Sauss. From two of these cells, a male and a female *T. amphitae* emerged on May 26, 1942. The nest was taken at Gray Summit, Missouri.

Note on Pseudoscorpions

By JANET L. C. RAPP, University of Illinois, Urbana, Illinois

Twenty-one specimens of pseudoscorpions were collected coincidentally with the author's field work on a problem for a thesis entitled "Insect Hibernation Studies in Champaign County, Illinois, During the Winter of 1944–45," so far unpublished. Most of the insects and the pseudoscorpions were taken with the use of a Jacot apparatus,[1] a modification of that originally proposed by Berlese. Essentially this consisted of a large funnel of sheet steel or copper with a sieve at the bottom and a 300 watt bulb suspended within an inch of the sample of litter taken from the field. The dry heat of this light drove the specimens downward through the sieve and into a beaker of 70 percent alcohol placed beneath the funnel. Surprisingly, in more than 90 such samples, pseudoscorpions were found only three times and then all from the same locality, Urbana, February 18, 1945. This area, lying east of town, was fairly wooded and not far from the west branch of the Salt Fork River. Several chestnut trees, evidently victims of the chestnut blight, had fallen and were starting to rot. Some of these were pried up and the material underneath was found to be free of frost. Debris from the tree plus some of the underlying soil yielded the following specimens:

Microbisium brunneum Hagen (1)
Pselaphochernes parvus Hoff (20)

The pseudoscorpions were kindly determined by Dr. C. Clayton Hoff of Quincy College.

Personal

We have learned by letter from Buenos Aires that **Dr. Augustin Riggi** has been appointed Director of the Museo Argentino de Ciencias Naturales, "Bernardino Rivadavia," as of July 10, 1946.

[1] Jacot, A. P. 1936. Soil structure and soil biology. Ecology, 17: 359–379.

Current Entomological Literature

COMPILED BY CHARLES HODGE IV, RAYMOND Q. BLISS, EDWIN T. MOUL, MAURICE E. PHILLIPS AND HENRY K. TOWNES JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences of Philadelphia and the University of Pennsylvania, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

This list gives references of the current or preceding year unless otherwise noted. Continued papers, with few exceptions, are recorded only at their first installment.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

NOTE: The figures within brackets [ ] refer to the journal in which the paper appeared, as numbered in the List of Journals given at the end of the literature. The number of the volume, and in some cases, the part, heft, &c. is followed by a colon (:). References to papers containing new forms or names not so stated in titles are followed by (*); if containing keys are followed by (k); papers pertaining exclusively to Neotropical species, and not so indicated in the title, have the symbol (S).

Papers published in ENTOMOLOGICAL NEWS are not listed.

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Review

PRACTICAL MALARIOLOGY. By Paul F. Russell, Luther S. West and Reginald D. Manwell, xix + 684 pp. W. B. Saunders Company, Philadelphia, London, 1946. $8.00.

Practical Malariology was prepared under the auspices of the Division of Medical Sciences of the National Research Council and is designed to give field, laboratory and clinical information about malaria. It was originally started as a military medical manual but has been changed to conform with civilian needs. The volume presents in an interesting narrative form an up-to-the-minute account of malariology that should prove to be of great value to all who are interested in this subject. The method of presentation is such that the book is not only interesting reading but useful as a source of general information and reference. Particularly valuable are the excellent digest of important recent literature and the carefully selected bibliographies. Aside from a relatively short historical introduction it contains sections on the parasite, mosquitoes, man, the community, prophylaxis and control, and therapeutic malaria, and an appendix with keys to the Anophelini of the world.

The section on the parasite not only discusses the human Plasmodia but also summarizes what is known concerning the various animal forms, both those used in experimental projects and others but newly discovered or poorly known. In this section one finds ". . . Physiologic peculiarities of a species may be just as real, and perhaps just as stable, but do not seem to be sufficient grounds for establishing new species." While "physiologic" species do not ease the lot of the investigator, is it feasible arbitrarily to deny them recognition? Particularly in entomology, the noting of physiologic differences and at times the naming of such forms has stimulated more critical morphological surveys. In many cases these have revealed substantiating characters. Perhaps refinements in technics and further investigations will reveal more readily recognized differences in the Plasmodia, but even if these fail should not the findings be the guide, not the ease of applying a measure? In this section

the chapter on laboratory technics summarizes the many important new methods available for research and diagnosis.

In addition to the usual morphology, taxonomy and biology, the section on mosquitoes includes interesting chapters on bionomics and distribution. In the latter are tables, by zoogeographic regions and subregions, of the important vectors showing areas where they are of importance, general range and larval habitat. Again there is a useful section on laboratory and field technics and a selected bibliography.

The pathology and clinical aspects are reviewed in the section on man and the various available treatments are discussed. The chapter on immunity, latency and relapse while giving an analysis of the available information clearly shows one of the many lacunae in our knowledge of malaria. The epidemiology of malaria, a discussion of the types of epidemics and the influence of climatological factors as well as methods of making surveys are interestingly covered in the section dealing with the community. The section on therapeutic malaria presents a summation of available knowledge.

Effective utilization of information discussed in the earlier sections and a discussion of various methods of prophylaxis and control are fully covered. The concise presentation of recent advances and the selected bibliography are valuable contributions.

Revised keys to the Anophelini of the world, which, while following previous keys, have some important changes, form an appendix. As new forms have been added and the status of several has been changed it is regretted that a selected bibliography has not been included.

Practical Malariology will undoubtedly prove to be one of the valuable contributions to the subject in recent times.

J. W. H. Rehn

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale or services rendered. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and, only when necessary those at the top (being longest in) are discontinued.

Odonata—Will buy or exchange North and Central American species, both imagos and nymphs. Also will exchange other orders for Odonata. Carl Cook, Crail Hope, Kentucky.

I want to collect Rothschildia farbesi, agapema, galfina and io moths for interested persons. E. Frizzell, Route 4, San Benito, Texas.

Wanted—Information as to the existence and present location of a copy of Solodonikov, S. V. Contribution à l'étude de la faune et de la biologie des larves des Libellules du Donetz et de certains de ces affluents. [In Ukrainian.] Trav. Soc. Nat. Charkow 52: 249–268. 1929. [Quoted from Zool. Rec. 1936, Ins. p. 147; No. 3114.] P. P. Calvert, P. O. Box 14, Cheyney, Penna.

Wanted—Crane-flies (Tipulidae) of New Guinea, New Caledonia and Neighboring Islands, for revisional purposes. Also, names and addresses of individuals or institutions possessing any of these flies. Correspondence solicited. Chas. P. Alexander, Fernald Hall, Amherst, Mass.

Lepidoptera—Wanted, Hyloicus (Sphinx) and other Sphingidae in exchange for U. S. and Wisconsin Lepidoptera. Wm. E. Sieker, 119 Monona Ave., Madison 3, Wisconsin.

Hymenoptera-Aculeata (except ants and bees) and **Ichneumonidae** for exchange or purchase. Will collect any order in exchange. D. G. Shappirio, 4811 17th St., NW, Washington 11, D. C.

Wanted—Oriental Cerambycidae and Chrysomelidae for determination and research purposes: China, India, Philippines, Pacific. Will purchase from China, Assam, Burma, Siam, Formosa. Will exchange identified Chinese insects. J. Linsley Gressitt, Lingnan University, Canton, China.

Wanted—Papers on Cicindelidae of any part of the world, especially South America and Pacific. R. G. Dahl, 3225 Grand Ave., Apt. 13, Oakland 10, Cal.

Chrysididae—Wanted for determination in preparation of revision. Wm. G. Bodenstein, Galesville, Maryland.

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